OBSERVATIONS & RECOMMENDATIONS

After reviewing data collected from **GRANITE LAKE** the program coordinators recommend the following actions.

FIGURE INTERPRETATION

- Figure 1: These graphs illustrate concentrations of chlorophyll-a in the water column. Algae are microscopic plants that are a natural part of lake ecosystems. Algae contain chlorophyll-a, a pigment necessary for photosynthesis. A measure of chlorophyll-a can indicate the abundance of algae in a lake. The historical data (the bottom graph) show a *stable* in-lake chlorophyll-a trend, with low variability. Chlorophyll-a concentrations have remained well below the NH mean value for over ten years! The blue-green alga *Anabaena* was dominant in August, but the overall abundance was sparse (see the Other Comments section below). While algae are present in all lakes, an excess amount of any type is not welcomed. Concentrations can increase when there are external and internal sources of phosphorus, which is the nutrient algae depend upon for growth. It's important to continue the education process and keep residents aware of the sources of phosphorus and how it influences lake quality.

- Figure 2: Water clarity is measured by using a Secchi disk. Clarity, or transparency, can be influenced by such things as algae, sediments from erosion, and natural colors of the water. The graphs on this page show historical and current year data. The lower graph shows an *improving* trend in lake transparency. Transparency in July was slightly higher than in August. The waves in August likely affected the monitors' views of the Secchi disk. Clarity readings in Granite Lake are well above the New Hampshire mean. The 2000 sampling season was considered to be wet and, therefore, average transparency readings are expected to be slightly lower than last year's readings. Higher amounts of rainfall usually cause more eroding of sediments into the lake and streams, thus decreasing clarity.

- Figure 3: These figures show the amounts of phosphorus in the epilimnion (the upper layer in the lake) and the hypolimnion (the lower layer); the inset graphs show current year data. Phosphorus is the limiting nutrient for plants and algae in New Hampshire waters.

Too much phosphorus in a lake can lead to increases in plant growth over time. These graphs show a *stable* trend for the upper water layer and a *slightly worsening* trend for the lower water layer. The phosphorus concentration in the hypolimnion was elevated from last year, however, this is based on only one result. The Franklin Pierce College laboratory had some difficulties with analyzing total phosphorus their first year, but the problems were fixed. Both layers have a concentration below the state median. One of the most important approaches to reducing phosphorus levels is educating the public. Humans introduce phosphorus to lakes by several means: fertilizing lawns, septic system failures, and detergents containing phosphates are just a few. Keeping the public aware of ways to reduce the input of phosphorus to lakes means less productivity in the lake. Contact the VLAP coordinator for tips on educating your lake residents or for ideas on testing your watershed for phosphorus inputs.

OTHER COMMENTS

- **Please note** in August the epilimnetic phosphorus level was reported as less than 5 µg/L. The NHDES Laboratory Services adopted a new method of analyzing total phosphorus this year and the lowest value that can be recorded is 'less than 5 µg/L'. We would like to remind the association that a reading of 5 µg/L is considered low for New Hampshire's waters.

- In 2000, small amounts of the blue-green alga *Anabaena* were observed in the plankton sample (Table 2). Blue-green algae can reach nuisance levels when sufficient nutrients and favorable environmental conditions are present. While overall algal abundance continues to be low in the lake, the presence of these indicator species should serve as a reminder of the lake's delicate balance. Continued care to protect the watershed by limiting or eliminating fertilizer use on lawns, keeping the lake shoreline natural, and properly maintaining septic systems and roads will keep algae populations in balance.

- The NHDOT project on Townline and Franklin Inlets was implemented from April through October of 2000, with monitors collecting rain event and dry weather samples. The rain event samples showed a general increase of total phosphorus at most sites, but the Townline Inlet sites did not have significant increases. In the Townline Inlet, metals concentrations tended to increase downstream of the Rt. 9 realignment. The Franklin Inlet downstream of site 5 was slightly affected by the runoff from the NHDOT storage area, although the water quality did not violate water quality standards. It would be useful to continue collecting samples from these sites so we could better determine the impacts from the NHDOT storage area over time.

- Conductivity levels were lower throughout the watershed this year, especially at the Townline Inlet (Table 6). The rains this year likely helped to flush and remove pollutants from the watershed. The Townline Inlet experienced one of the lowest mean conductivity levels since sampling of this site began in 1993.

- The mean total phosphorus remains low throughout the watershed (Table 8). This is a promising sign for the health of the lake. We will continue to observe the phosphorus concentrations in the watershed.

- Dissolved oxygen was again high at all depths of the lake (Table 9). As stratified lakes age, oxygen is depleted in the lower layer by the process of decomposition. The lack of this aging indicator is a sign of the lake's overall health.

NOTES

- Monitor's Note (8/14/00): Wondering about divers for picking milfoil. Contact Dawn Baybutt; also checking around boat launch for milfoil. Saw loon. Floating little balls in water; possible algae bloom?

- Monitor's Note (7/16/00): All three tributaries had slight flow. Fairly heavy rain previous night.

USEFUL RESOURCES

Stormwater Management and Erosion and Sediment Control Handbook. NHDES, Rockingham County Conservation District, USDA Natural Resource Conservation Service, 1992. (603) 679-2790.

Save Our Streams Handbook for Wetlands Conservation and Sustainability. (800) BUG-IWLA, or visit www.iwla.org

Bacteria in Surface Waters, *WD-BB-14*, NHDES Fact Sheet, (603) 271-3503 or www.state.nh.us

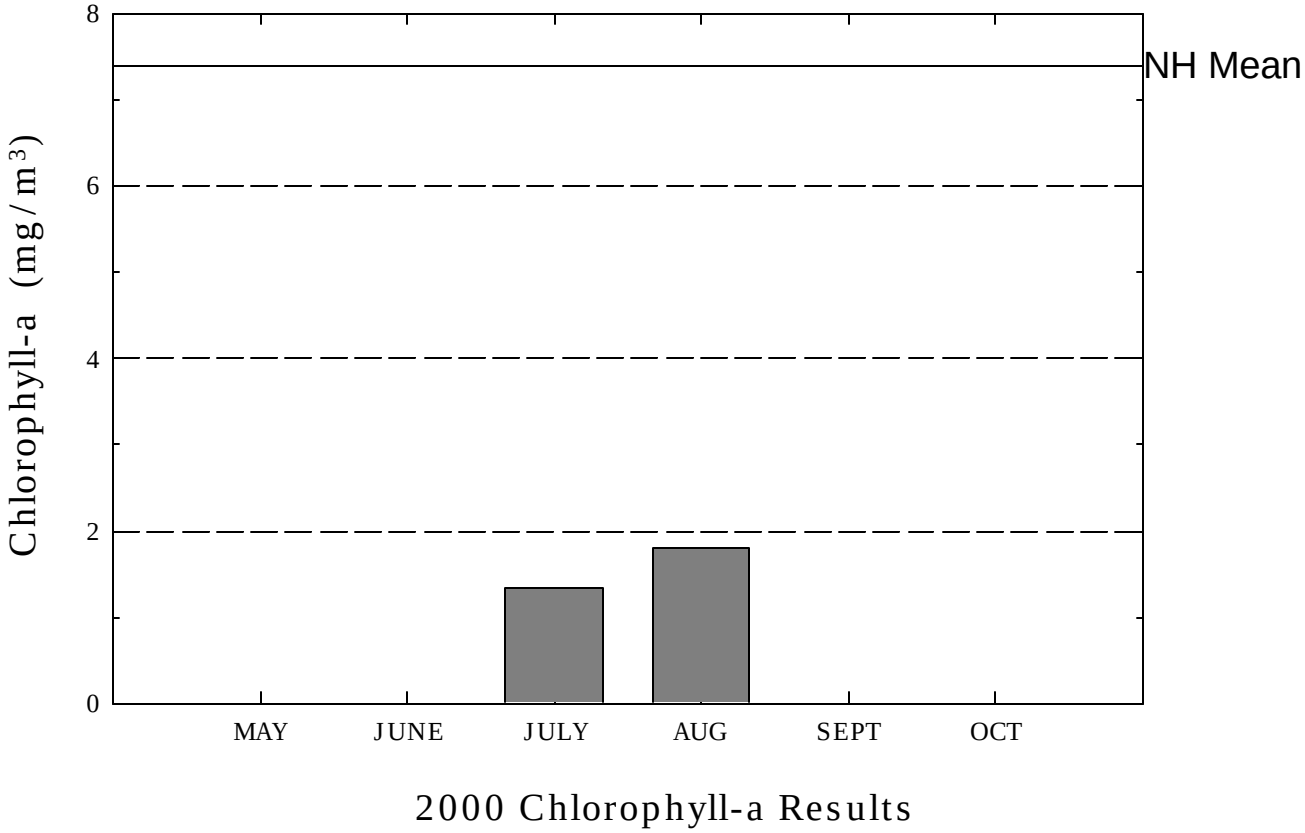
In Our Backyard. 1994. Terrence Institute, call (800) 726-5253, or www.terrene.org.

Anthropogenic Phosphorus and New Hampshire Waterbodies, *NHDES-WSPCD-95-6*, NHDES Booklet, (603) 271-3503

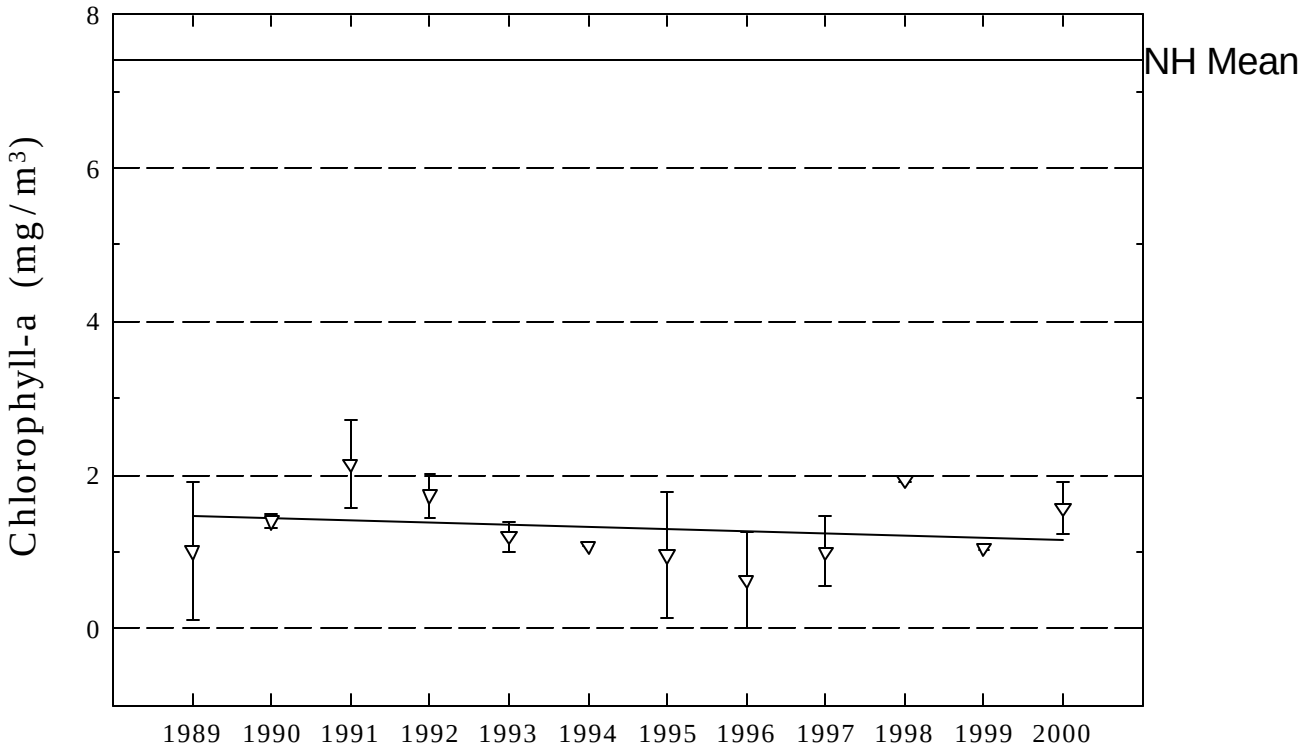
Handle With Care: Your Guide to Preventing Water Pollution. Terrene Institute, 1991. (800) 726-5253, or www.terrene.org .

Granite Lake

Figure 1. Monthly and Historical Chlorophyll-a Results



2000 Chlorophyll-a Results



Historical Chlorophyll-a Results